



# VAPOR QUALITY

Energy Efficient  
Evaporator Control



VAPOR QUALITY



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VAPOR QUALITY

# INTRODUCTION

- This presentation is about Vapor Quality Control
- Please note that we constantly improve and modify our presentations. This is our latest version, 2022.
- If you have comments or suggested improvements, please contact:  
Henrik Kudsk, product manager, [hk@hbproducts.dk](mailto:hk@hbproducts.dk)





# CASE STUDIES ON LOW CHARGE

- Colmac Coil has several case stories showing a reduction from 3.9 to 0.9 kg/kW (30 to 7 lbs/TR).
- A 64,000 m3 (2,260,00 ft3) cold store project developed by Scantec Refrigeration has a charge of only 385 kg.
- If a chiller design is used, the charge can be reduced below 0.1 kg/kW. This is demonstrated on the Ecodesign chiller we have in-house and which is described on our webpage.





# DX AMMONIA COLD STORE IN ROMANIA

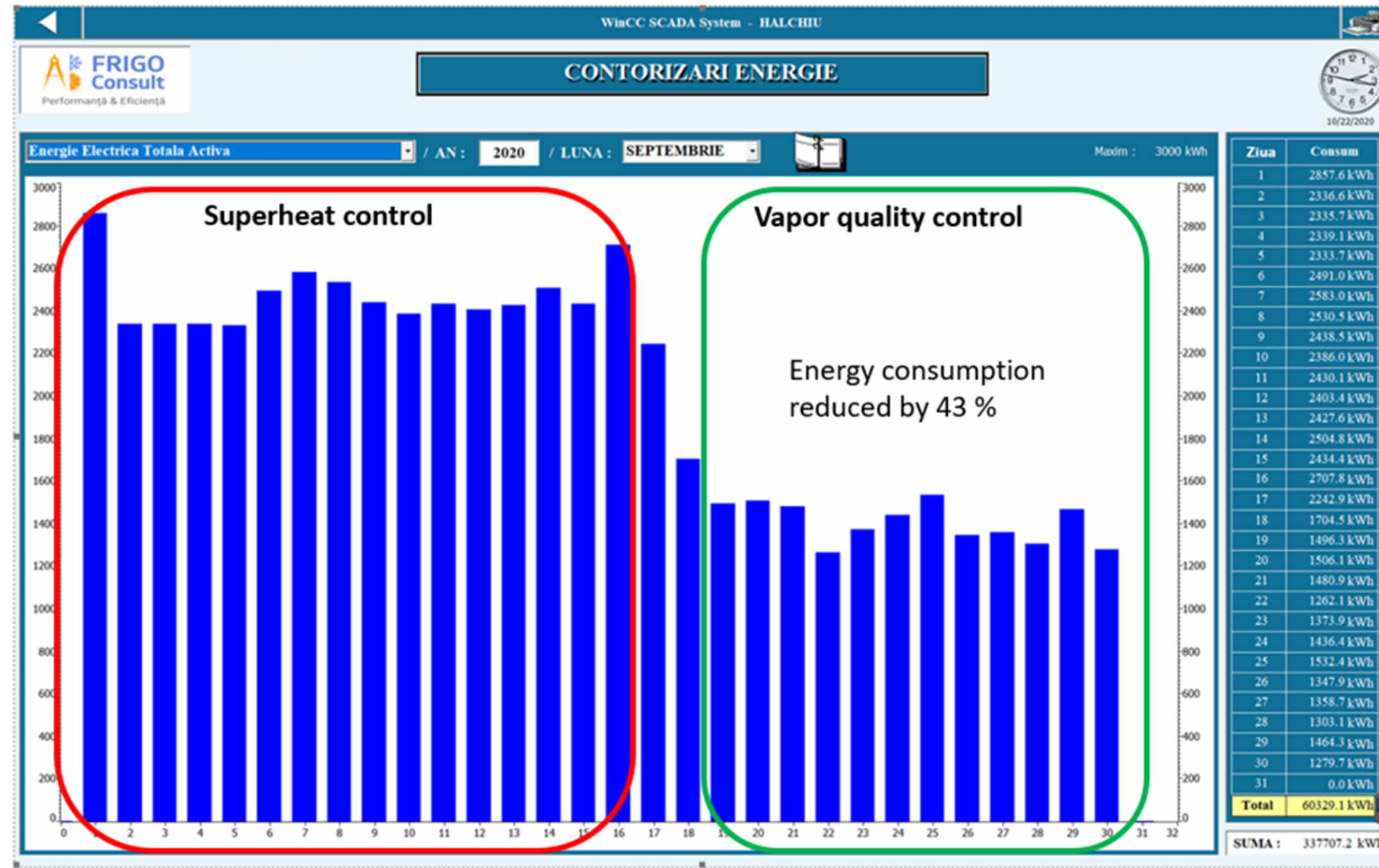
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# 40 % REDUCED ENERGY CONSUMPTION

## – THE HALCIU PLANT

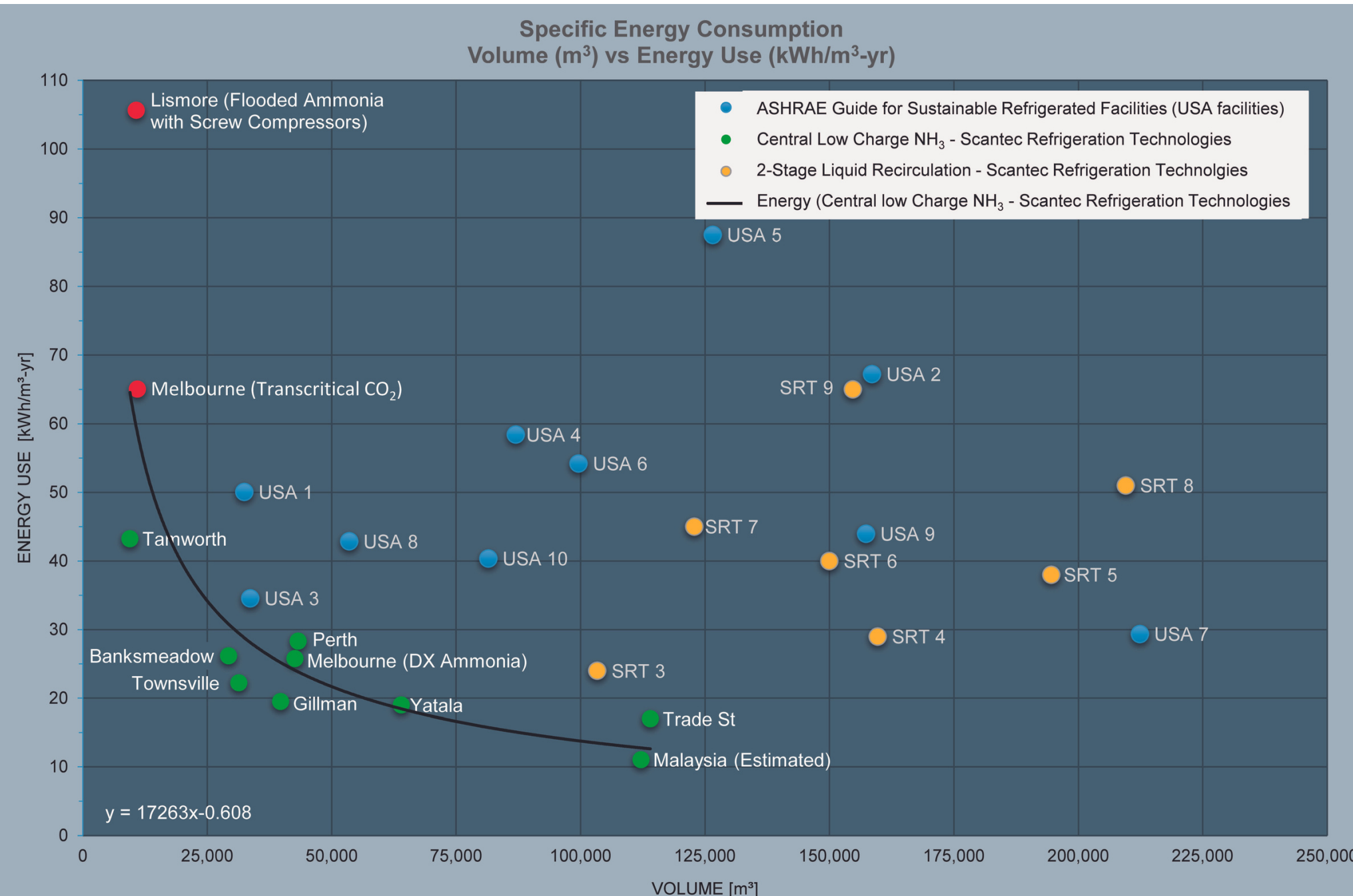


## THE RESULTS

- The bar graph shows the daily energy consumption of the Halciu plant in Romania.
- Vapor Quality control, replaced superheat control in September 2020.
- The total energy consumption for the refrigeration system was reduced by 43%.



# REDUCED ENERGY CONSUMPTION FOR COLD STORES



- The specific energy consumption (SEC) for refrigerated warehouses is usually recorded as annual energy consumption [kWh/a] divided by the refrigerated volume of the warehouse [m<sup>3</sup>].

- On the graph annual energy consumption per cubic meter is plotted versus the volume.

- The green dots, below the green line are all DX ammonia systems using vapor quality control.

- The yellow and blue dots are typical pump-circulated systems using ammonia.

- Typically the energy consumption of the pump-circulated systems is 1.4 to 8 times larger than the DX ammonia system.



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VAPOR QUALITY

WORKS WITH NH<sub>3</sub>, CO<sub>2</sub>, HFC/HFO

Evaporator control based on Vapor Quality

• Energy saving

• For all refrigerants

• Enables low charge systems

WE INCREASE UPTIME, SAFETY AND EFFICIENCY

VAPOR QUALITY CONTROL

**REDUCTION OF ENERGY CONSUMPTION USING VAPOR QUALITY CONTROL**

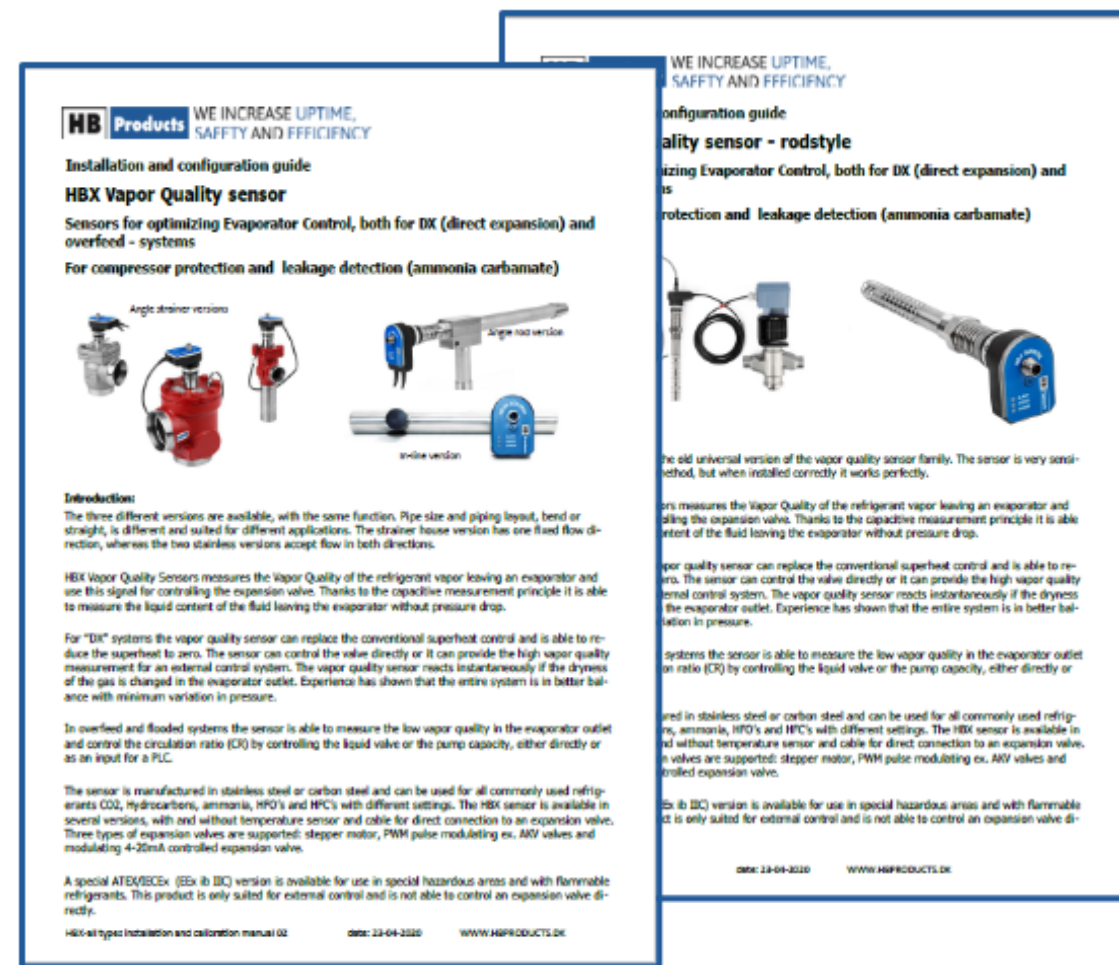
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## ADDITIONAL INFO

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